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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,990	01/15/2002	Satoshi Arakawa	216449US-8	2720

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EXAMINER

ROCCHEGIANI, RENZO

ART UNIT PAPER NUMBER

2825

DATE MAILED: 04/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/044,990

Applicant(s)

ARAKAWA ET AL.

Examiner

Renzo N. Rocchegiani

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**The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of claims 12-16 in Paper No. 7 is acknowledged.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 12-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 12 recites the limitation "the other of the multilayer . . . DFB laser". There is insufficient antecedent basis for this limitation in the claim. It is not clear as to what this language refers to since the claim seem to refer to the formation of only one EA modulator and one DFB laser.

5. Claim 13 also recites the limitation "the other of the DFB laser and the EA modulator". There is insufficient antecedent basis for this limitation in the claim. Just as in claim 12, it is not clear what this limitation is referring to.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,820,655 (Noda et al.).

Noda et al. disclose a process to form a monolithic semiconductor optical device comprising the steps of providing a substrate (item 1, Fig. 4A), sequentially forming an EA modulator and a DFB laser on the substrate (Fig. 4A-F). The process comprises forming a multilayer structure for either the modulator or the laser over the whole substrate (Fig. 4A), etching the structure to uncover a region of the substrate (Fig. 4B), forming a second multilayer structure for either the modulator or the laser (Fig. 4C), whichever has not been formed, and etching to create two mesa structures one being the laser and the other the modulator (Fig. 4E). Furthermore, Noda et al. disclose that the modulator may comprise an aluminum based active region. (col. 4, lines 20-25).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,820,655 (Noda et al.) in view of U.S. Patent No. 5,585,957 (Nakao et al.).

As stated in paragraph 6, all the limitations of the claims have been met except

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for specifying that the etch process is a dry etch process involving bromine and methane-based species.

Nakao et al. teaches a method of forming an optical semiconductor device with mesa formation wherein the multilayer structures are etched via a dry etch process involving methane-based and bromine species. (col. 21, lines 50-60).

It would have been obvious to one having ordinary skill in the specific art to apply the teachings of Nakao et al. to the invention disclosed by Noda et al., since Noda et al. does not limit the etching step to a specific process, and since it has been held to be within the level of ordinary skill of a worker in the art to use conventional materials to perform their known functions in a conventional process. *In re Raner* 134 USPQ 343 (CCPA 1962).

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,820,655 (Noda et al.) in view of Applicant's disclosure pages 2-3.

As stated in paragraph 6, all the limitations of the claim have been met except for teaching the sandwiching of the structure in Fe-doped InP.

In the background section of the present application the applicant describes what has been admitted to be known in the art in the manufacturing process of optical devices, and in this disclosure applicant admits that it is common practice to sandwich the structure with Fe-doped InP material.

In light of applicant's admission, it would have been obvious to one with ordinary skill in the specific art to use a material such as Fe-doped InP to sandwich the structures, since such a process is common practice.

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**Conclusion**

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renzo Rocchegiani whose telephone number is (703) 308-5839. The examiner can normally be reached on Monday through Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached at (703) 308-1323. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318.

RNR

April 17, 2003



MATTHEW SMITH  
SUPERVISORY PATENT EXAMINER  
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